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EXAMINER	
HUGHES, SCOTT A	

ART UNIT	PAPER NUMBER
3663	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/576,827	GRATACOS, BRUNO	
	Examiner	Art Unit	
	Scott A. Hughes	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/29/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 1 contains the limitation "the operators to be applied to the various components of the sensor are determined in such a way as to minimize the deviation between reference data and data obtained by applying the estimators the sensor reconstruction". The phrase “are determined in such a way as to” is not enabled because the specification does not specifically the ways in which the operators can be determined. The phrase "in such a way" implies that there are multiple ways to determine the operator, but the specification does not specifically recite what these ways are. The specification does not specifically define what the operators are or how they are determined.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 6 recite the limitation "making it possible to isolate the various data." This limitation is indefinite because it is unclear whether an isolation of the various data is a required step, or whether it is a step that can be performed but is not being claimed.

Claim 1 recites the limitation "the operators to be applied to the various components of the sensor are determined in such a way as to minimize the deviation between reference data and data obtained by applying the estimators the sensor reconstruction." This limitation is indefinite because the term "in such a way" renders the scope of the claim indefinite. It is unclear how the operators are determined or what the operators are because applicant's limitation of "in such a way as to" does not clearly define the method used. It is unclear if the claim limitations are an example of the way in which in the operators could be determined, or if there is only one way that the operators are determined.

For the purpose of this action, the claims will be examined as though an isolation of the various data is required, and as if the operators have to be determined by minimizing the deviation between reference and recorded data.

Claim 4 recites the limitation "the transverse reflection" in the last line of the claim. There is insufficient antecedent basis for this limitation in the claim, as no previous claim has recited that an estimator of a transverse reflection is present.

Claims 2-5 depend from claim 1 and are therefore also indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Gaiser (6205403).

With regard to claim 1, Gaiser discloses a method of processing seismic data acquired by means of a sensor having at least three geophone components (Column 1; Column 3, Lines 10-47), characterized in that estimators are determined which are combinations of these components making it possible to isolate the various data depending on whether they correspond to propagation with reflection or with conversion (Column 1; Column 3, Line 10 to Column 5, Line 58) and in that, to determine a sensor reconstruction, the operators to be applied to the various components of the sensor are determined in such a way as to minimize the deviation between reference data and data obtained by applying the estimators the sensor reconstruction (Column 3, Line 10 to Column 5, Line 58), the operators thus determined being applied to the data acquired (Column 3, Line 10 to Column 5, Line 58).

With regard to claim 2, Gaiser discloses that the sensor furthermore includes a hydrophone, and that the reference data for reconstructing a vertical geophone are

derived from the data acquired by the hydrophone (Column 1; Column 3, Line 10 to Column 5, Line 58).

With regard to claim 3, Gaiser discloses that the reference data for reconstructing a vertical geophone without hydrophone or for reconstructing horizontal geophones are derived from application of the estimators to one of the geophones of the sensor (Column 3, Line 10 to Column 5, Line 58).

With regard to claim 4, Gaiser discloses that the orientation in the horizontal plane of a geophone component is obtained by minimizing the estimator of the transverse reflection (Column 4, Lines 1-62).

With regard to claim 5, Gaiser discloses that the estimators are determined as a function of a model of isotropic propagation or including the azimuthal anisotropy.

With regard to claim 6, Gaiser discloses a method of processing seismic data acquired by means of a sensor having at least three geophone components (Column 1; Column 3, Lines 10-47), characterized in that estimators are determined which are combinations of these components making it possible to isolate the various data depending on whether they correspond to propagation with reflection or with conversion (Column 1; Column 3, Line 10 to Column 5, Line 58).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-6 are rejected under 35 U.S.C. 102(a) as being anticipated by Horne (GB2379505).

With regard to claim 1, Horne discloses a method of processing seismic data acquired by means of a sensor having at least three geophone components (Pages 2, 8), characterized in that estimators are determined which are combinations of these components making it possible to isolate the various data depending on whether they correspond to propagation with reflection of with conversion (Page 2, Last paragraph; Pages 4-12) and in that, to determine a sensor reconstruction, the operators to be applied to the various components of the sensor are determined in such a way as to minimize the deviation between reference data and data obtained by applying the estimators the sensor reconstruction, the operators thus determined being applied to the data acquired (Pages 4-12, 15-18).

With regard to claim 2, Horne discloses that the sensor furthermore includes a hydrophone, and that the reference data for reconstructing a vertical geophone are derived from the data acquired by the hydrophone (Page 1, 2nd paragraph; Page 2; Page 8).

With regard to claim 3, Horne discloses that the reference data for reconstructing a vertical geophone without hydrophone or for reconstructing horizontal geophones are derived from application of the estimators to one of the geophones of the sensor (Pages 4-12, 15-18).

With regard to claim 4, Horne discloses that the orientation in the horizontal plane of a geophone component is obtained by minimizing the estimator of the transverse reflection (Pages 4-12, 15-18).

With regard to claim 5, Horne discloses that the estimators are determined as a function of a model of isotropic propagation or including the azimuthal anisotropy (Page 7, Line 1 to Page 8, Line 3).

With regard to claim 6, Horne discloses a method of processing seismic data acquired by means of a sensor having at least three geophone components (Pages 2, 8), characterized in that estimators are determined which are combinations of these components making it possible to isolate the various data depending on whether they correspond to propagation with reflection of with conversion (Page 2, Last paragraph; Pages 4-12)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gaiser as applied to claims 1-4 and 6 above, and further in view of Baigini (WO0151955).

With regard to claim 5, Gaiser does not disclose that the estimators are determined as a function of a model of isotropic propagation or including the azimuthal

anisotropy. Baigini teaches using estimators to restructure the components of a sensor and teaches that the estimators are determined as a function of a model of isotropic propagation or a model including the azimuthal anisotropy (Pages 5-10). It would have been obvious to modify Gaiser to include of a model of isotropic propagation or a model including the azimuthal anisotropy as taught by Baigini in order to determine the shot geometries for the geophones dependent upon their coupling.

Conclusion

The cited prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A. Hughes whose telephone number is 571-272-6983. The examiner can normally be reached on M-F 9:00am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAH

JACK KEITH
SUPERVISORY PATENT EXAMINER